

### **REMARKS**

The Office Action dated December 19<sup>th</sup>, 2005 has been reviewed carefully and the application has been amended in a sincere effort to place it in condition for allowance.

### **Elections/Restrictions**

Pursuant to the telephone conversation between the undersigned and the Examiner on December 6<sup>th</sup>, 2005, an election was made without traverse to prosecute the invention of Species V, claims 124 and 125. Claims 117 and 123 are cancelled herein without prejudice.

New Claims 126 and 127 are added herein to better claim the invention.

### **Claim Rejections 35 USC § 103**

Claim 124 was rejected under 35 USC § 103(a) as being unpatentable over United States Patent No. 5,869,202 which issued on February 9, 1999, to Marchetti ("Marchetti") in view of United States Patent No. 6,652,804 which issued on November 25<sup>th</sup>, 2003 to Neumann, et al. ("Neumann").

Applicant's invention as set forth in representative claim 124 comprises in part:

A direct oxidation fuel cell, comprising:

a) a membrane electrode assembly including a protonically conductive, electronically non-conductive membrane electrolyte having an anode aspect and an opposing cathode aspect; and

b) a metallic layer component disposed generally adjacent to said membrane electrolyte that limits the mass transport of liquid reactants to the membrane electrolyte, said metallic layer component being fabricated of microscopic particles that have been heated and bonded together such that openings are created wherein the size of said openings is deter-

mined by the diameter of the particles, and the diameter is chosen to allow various reactants to pass through as desired.

In contrast, Marchetti teaches a gas permeable current collector made of, or plated with nickel, titanium or gold (Col. 6, lines 37-38), for use with a graphite electrode. The graphite electrode is extremely thin and thus can be undesirably forced into channels in the current collector (Col. 6, lines 30-34). Thus, Marchetti teaches a current collector made of “sintered metal frits” (Col. 6, lines 33-35). This may be sufficient to allow reactant gasses to flow in a hydrogen gas fuel cell, however, such metal frit current collector does not disclose teach or suggest the particle bonded metallic layer component used to limit the mass transport of liquid fuel or other reactants as claimed by Applicant. There is nothing in Marchetti which discloses, teaches or suggest that the particle size is selected so as to limit liquid fuel substance to flow therethrough. Instead, Marchetti is focused on solutions for use with a thin graphite electrode. As noted by the Examiner, Marchetti teaches the use of pressurized hydrogen gas as the fuel substance for the anode. Thus, Marchetti does not disclose, teach or suggest solutions to those skilled in the art for limiting liquid reactants, such as fuel substances (such as methanol) on the anode side, and/or water (and oxygen) on the cathode side.

Neumann teaches a metal film made from a process that uses metal powders. Neumann requires that: “the layer thickness must correspond to at least 3-times the diameter  $D$  of the powder particles.” (Col. 2, lines 13-14). Neumann further states that it is preferable that the layer is 5 to 15 times, and preferably 10 to 15 times the diameter  $D$  of the powder particles (Col. 2, lines 18-21). Yet, there is no suggestion that this thickness

is suitable for use in limiting mass transport of liquid fuel substances such as methanol, as in Applicants' claimed invention. In fact, Neumann is directed to solutions for a hydrogen gas fuel cell (see, e.g., Col. 9, lines 41-45).

Neither Marchetti nor Neumann, nor the combination thereof discloses, teaches or suggests "a metallic layer component disposed generally adjacent to said membrane electrolyte that limits the mass transport of liquid reactants to the membrane electrolyte." Moreover, neither reference nor the combination is directed to limiting mass transport of liquid methanol, instead both references teach away in that they are providing solutions for hydrogen gas fuel cells. Accordingly, the combination of Marchetti and Neumann does not render Applicants' invention obvious under 35 USC § 103.

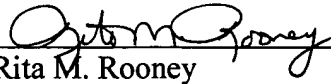
The remaining claims, and the new claims, are dependent upon independent claim 124 and it is thus respectfully submitted that, for the reasons set forth herein, these dependent claims are patentable over the cited art.

Please do not hesitate to contact the undersigned in order to advance the prosecution of this application in any respect.

Please charge any additional fee occasioned by this paper to our Deposit Account

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Respectfully submitted,

  
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